



**University
of Victoria**

Graduate Studies

Notice of the Final Oral Examination
for the Degree of Master of Science

of

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BA (University of Western Ontario, 2011)

**“A Randomized Controlled Trial Exploring the Feasibility of
Multimedia-Based Exercise Programs on Older Adult Adherence and
Physical Activity”**

School of Exercise Science, Physical and Health Education

Thursday, September 10, 2015

10:00am

Halpern Centre for Graduate Students

Room 108

Supervisory Committee:

Dr. Ryan Rhodes, School of Exercise Science, Physical and Health Education, University of Victoria
(Supervisor)

Dr. Sandra Hundza, School of Exercise Science, Physical and Health Education, UVic (Member)

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Dr. John Anderson, Department of Educational Psychology and Leadership Studies, Uvic

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Dr. Julio Navarro, Department of Physics, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Background & Objectives: Transitioning into retirement may be a suitable period to help older adults establish an active lifestyle. One promising and innovative way to improve adherence and promote PA may be home-based multimedia interventions. This experiment aimed to explore the efficacy of DVD and videogame-based exercise programs for improving adherence and physical activity (PA) in adults transitioning into retirement. Underlying motivations, functional fitness, quality of life, and elicited beliefs from participating in the exercise programs were also explored.

Methods: Twenty-seven adults were randomly assigned to one of three groups: a nine-week exercise DVD, exergame, or waitlisted control group. Main outcomes include adherence was based on attendance during the in-lab component and participant logs during the in-home component, as well as PA levels measured with accelerometry was used to assess PA at baseline, four-, nine- and 12-weeks. Secondary outcomes related to motivation were assessed at baseline, three- and nine-weeks. Tertiary outcomes such as physiological/functional fitness and quality of life outcomes were assessed at baseline and follow-up.

Results: During the in-lab phase of the study, adherence was slightly higher in the exergame group than the DVD group ($t_{16} = -0.06$, $p = .96$; $d = .31$). At four weeks, the group by time interaction for MVPA yielded approached a moderate effect size ($F_{2,24} = 0.87$, $p = .52$; $\eta^2 = .05$), while overall PA saw negligible changes ($F_{2,24} = 0.16$, $p = .85$; $\eta^2 = .01$). Post-hoc analyses revealed higher levels of MVPA were limited to the exergame group ($d = .33$). At the end of the intervention, overall adherence was similar between both exercise groups ($t_{16} = -0.06$, $p = .96$; $d = .03$). The group by time interaction effect yielded a moderate effect size for MVPA ($F_{2,24} = 1.07$, $p = .36$; $\eta^2 = .08$) and overall PA ($F_{2,24} = 1.11$, $p = .35$; $\eta^2 = .08$). Post-hoc analyses that the DVD group higher levels of MVPA than the control and exergame groups ($d = .35-.64$). Overall PA only increased in the exergame group ($d = .74$). The exergame group saw major decreases in instrumental attitude ($d = .64$), injunctive norm ($d = .79$), perceived behavioural control ($d = .40$) and intention ($d = .90$). Compared to the control group, both exercise groups saw improvements to strength, mobility, and aerobic endurance ($d = .33-.98$), as well as several quality of life domains ($d = .32-.89$). At the post-intervention follow-up, both exercise groups were more active than the control group ($d = .49-1.03$). Two-thirds of the DVD group adopted DVD-based exercise, while a third of exergame group adopted videogame-based exercise.

Conclusions: Overall, multimedia-based exercise programs, such as DVDs and videogames, exhibit a potential to significantly increase PA levels in older adults. In conjunction these with encouraging behavioural changes, improvements to important functional and quality of life domains were identified. Overall, this pilot study provides the support for further investigational efforts with larger scale trials.